



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,507	10/29/2003	Allen Samuels	2006579-0757 (CTX-290)	5753
69665 7590 11/13/2008 CHOATE, HALL & STEWART / CITRIX SYSTEMS, INC. TWO INTERNATIONAL PLACE BOSTON, MA 02110				
EXAMINER				
RIVAS, SALVADOR E				
ART UNIT		PAPER NUMBER		
2419				
MAIL DATE		DELIVERY MODE		
11/13/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/696,507

**Applicant(s)**

SAMUELS ET AL.

**Examiner**

SALVADOR E. RIVAS

**Art Unit**

2419

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 2,3,5-15 and 17-25 is/are rejected.
- 7) ☒ Claim(s) 4,16,27 and 28 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 July 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
- Paper No(s)/Mail Date 7/1/2008.

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This Action is in response to Applicant's amendments filed on July 1, 2008.

**Claims 2-28** are now pending in the present application. **This Action is made final.**

#### **Information Disclosure Statement**

2. The information disclosure statement(s) submitted on July 01, 2008 has been considered by the Examiner and made of record in the application file.

#### ***Drawings***

3. The drawings were received on July 1, 2008. These drawings are accepted.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 2, 6, 8, 10, 12-14, 18, 20, 22 and 24-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Neale et al. (U.S. Patent Application Publication # 2003/0131079 A1)** in view of **Dolson et al. (U.S. Patent Application Publication # 2004/0006643 A1)**.

Regarding **claims 2 and 14**, Neale et al. teach a system for performing by proxies (Fig.1 102, 106) discovery of a maximum transmission unit of a path (read as a path MTU Discovery mechanism (paragraph [0028], Lines 2-3)) between a client (Fig. 1 @ 101) and a server (Fig. 1 @ 107) in a more efficient manner, the system (Fig.1) comprising: a first proxy (Fig.1 @ 102) and a second proxy (Fig.1 @ 106) for transmitting network packets between a client (Fig. 1 @ 101) and a server (Fig. 1 @ 107). However, Neale et al. fails to teach determining a size for a path maximum transmission unit (PMTU) for transmitting network packets, repacketizing packets received into packet sizes in accordance with the size of the PMTU, and transmitting the repacketized packets; and detecting a packet received from transmission of repacketized packets is fragmented, and transmitting an acknowledgement packet marked with an indicator that fragmentation has occurred.

Dolson et al. teach a TCP proxy with the capability to inspect and modify a TCP stream. For instance, Dolson et al. teach a method for examining segments (Fig.3 @ 100) to determine if segment requires modifications (Fig.3 @ 104) ([0019]). Also, should the segment require modifications, generating modification tags for the segment (Fig.3 @ 108, [0020]). Also, Dolson et al, teach a method for detecting a packet received from transmission of repacketized packets is fragmented (Fig.8 @ 194, 196, "a test is made to determine if the modified segment is smaller than the original segment. If the test is true, then processing moves to step 196. At step 196 a test is made to determine if multiple fragments exist."). Furthermore, Dolson et al. teach that each state machine (Fig.3 @ 100) monitors the segments it sends and monitors the acknowledgement coming from the other side of the connection (Paragraph [0234] Lines 1-3). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the processing of a segment in the TCP proxy as taught by Dolson et al. with the system of Neale et al. for the purpose of fragmenting a data packet coming from a source (e.g., client) into smaller size packets in order to transmit data to a destination (e.g., server). Also, for the purpose of determining and establishing the size of data packets being received and sending a notification acknowledgement along with an indicator of the type of data packets (even those data packets that have been partitioned due to a limit of the size of data being exchanged) traveling between client and server systems.

Regarding **claims 6 and 18**, and **as applied to claims 2 and 14 above**, Neale et al. teaches a system wherein step (e) comprises generating, by the second proxy

(Fig.1 @ 106), the acknowledgement packet ("when a data packet arrives at its receiver, an acknowledgement packet is formed ...", paragraph [0051] Lines 2-4) to have a bit (read as an acknowledgement type bit flag (Fig.5 @ 514)) to indicate that fragmentation has occurred ("... and the bit fields could indicate contiguous packets, older or newer, ...", paragraph [0050] Lines 13-19). However, Neale et al., as modified by and Dolson et al., fails to teach a TCP header.

Dolson et al. teach a TCP header (Fig.2 @ 76). It would have been obvious to a person of ordinary skill in the art to combine Dolson et al. with Neale et al. for the purpose of TCP header containing a size of data packets field and establishing a notification acknowledgement field along with an indicator of the type of data packets (even those data packets that have been partitioned due to a limit of the size of data being exchanged) traveling between client and server systems. The motivation being to improve the performance, efficiency, and user experience of systems transporting TCP/IP traffic.

Regarding **claims 8 and 20**, and **as applied to claim 2 and 14 above**, Dolson et al., as modified by Neale et al. and, teach a system wherein step (e) comprises generating (Fig.3 @ 108), by the second proxy, the acknowledgement packet to have a field in an internet protocol header (Fig.2 @ 74) set to indicate that fragmentation has occurred (Paragraph [0234] Lines 1-3).

Regarding **claims 10 and 22**, and **as applied to claims 2 and 14 above**, Neale et al., as modified by Dolson et al., teaches a system (Fig.1) comprising reducing, by the first proxy (read as PEP1 (Fig.1 @ 102)), the size of the PMTU in response to

receipt of the acknowledgement packet (The PEP intercepts an ICMP message prompting for the PEP to "reduce its path MTU estimate and retransmits the data packet into smaller packets..." (paragraph [0047] Lines 20-21) destined for the server (Fig.1 @ 107)).

Regarding **claim 12 and 24**, and **as applied to claims 10 and 14 above**, Neale et al., as modified by Dolson et al., teaches a system (Fig.1), comprising reducing the size of the PMTU (The PEP intercepts an ICMP message prompting for the PEP to "reduce its path MTU estimate and retransmits the data packet into smaller packets..." (paragraph [0047] Lines 20-21) destined for the server (Fig.1 @ 107)). However, Neale et al, as modified by Dolson et al., fail to teach the reduction of the PMTU size by one-half. One of ordinary skill in the art, would have expected Applicant's invention to perform equally well with Neale et al., as modified by Dolson et al., because as long as the data packets are reduced to a smaller sized compared to the original MTU size the purpose of the transmission of data occurs to a selected receiver (server system) on a given network.

Regarding **claim 13 and 25**, and **as applied to claims 2 and 14 above**, Neale et al., as modified by Dolson et al., teaches a system (Fig.1) wherein step (a) comprising triggering the determination of the PMTU by the first proxy (read as PEP1 (Fig.1 @ 102) "... interact with the PMTUD mechanism", paragraph [0054] Lines 2-3) in response to one of receipt of the indicator that fragmentation has occurred or an elapse of time ("... treatment of the packet stream as a byte stream at the PEP devices and a timer to wait for following packets should be minimize further small (less than path MTU

estimate) packets being sent.", paragraph [0054] Lines 6-9).

**Claims 3, 5, 11, 15, 17 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Neale et al. (U.S. Patent Application Publication # 2003/0131079 A1)**, in view of **Dolson et al. (U.S. Patent Application Publication # 2004/0006643 A1)**, and further in view of **Dempo (U.S. Patent # 6,934,288 B2)**.

Regarding **claims 3 and 15**, and **as applied to claims 2 and 14 above**, Dempo, as modified by Neale et al. and Dolson et al., teaches a system (Fig.1 @ 10) wherein step (a) comprises determining, by the first proxy, a value for the PMTU greater than the current value of the PMTU ("The IP header processing division **30** compares the extracted IP packet (length) with the MTU size to examine whether the IP packet exceeds the MTU size.", Column 5 Lines 13-15).

Regarding **claims 5 and 17**, and **as applied to claims 2 and 14 above**, Dempo, as modified by Neale et al. and Dolson et al., teaches a system wherein step (c) comprises transmitting, by the first proxy (read as Fig.1 @ 102 from the communication system in Neale et al.), the repacketized packets without one of prohibiting fragmentation or setting the defragmentation flag of the packet off ("...the fragmentation processing determination means that the IP packets do not require to have a fragmentation process executed, assembling IP packets from the fixed packets in the order in which they are inputted to the fragmentation processing device and sending them ...", Column 2, Lines 40-45).

Regarding **claims 11 and 23**, and **as applied to claims 10 and 14 above**, Dempo, as modified by Neale et al. and Dolson et al., teaches a system (Fig.1 @ 10)



comprising transmitting, by the first proxy, repacketized client packets formed in accordance with the size of the decreased PMTU (“...creating a plurality of IP packets of a size smaller than the MTU size ... in the order in which they are inputted to the fragmentation processing device, sending these IP packets, ...”, Column 2 Lines 34-35).

**Claims 7 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Neale et al. (U.S. Patent Application Publication # 2003/0131079 A1)**, in view of **Dolson et al. (U.S. Patent Application Publication # 2004/0006643 A1)**, and further in view of **Donzis et al. (U.S. Patent # 6,973,097 B1)**.

Regarding **claims 7 and 19**, and **as applied to claims 2 and 14 above**, Neale et al., as modified by Dolson et al., teach a system (teach PEP2 (Fig.1 @ 106)) wherein step (e) comprises generating, by the second proxy (Fig.1 @ 106), the acknowledgement packet (“when a data packet arrives at its receiver, an acknowledgement packet is formed ...”, paragraph [0051] Lines 2-4) set to indicate that fragmentation has occurred (“...this acknowledgement field may indicate the newest packet acknowledged ... or the oldest packet acknowledged ...”, paragraph [0050] Lines 15-17). However, Neale et al., as modified by Dolson et al., fail to teach an option field in a transport control protocol header (read as TCP header (Fig.6 @ 600)).

Donzi et al. teach a TCP header (Fig.6 @ 600)) and an option field (read as option field (Fig.6 @ 612)). It would have been obvious to a person of ordinary skill in the art to combine Donzi et al with Neale et al., as modified by Dolson et al., for the purpose of TCP header containing an option field to be used for acknowledging a repacketizing/fragmentation of data packets. The motivation being to improve the

performance, efficiency, and user experience of systems transporting TCP/IP traffic.

**Claims 9 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Neale et al. (U.S. Patent Application Publication # 2003/0131079 A1)**, in view of **Dolson et al. (U.S. Patent Application Publication # 2004/0006643 A1)**, and further in view of **Badt et al. (U.S. Patent # 5,959,974)**.

Regarding **claims 9 and 21**, and **as applied to claims 2 and 14 above**, Badt et al., as modified by Neale et al. (teaches PEP1 (Fig.1 @ 102)) and Dolson et al., teach a method and system comprising stopping, by the first proxy, PMTU discovery in response to receipt of the acknowledgement packet (Column 6 Lines 16-24).

***Allowable Subject Matter***

5. **Claims 4 and 16** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Claim 26** is allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding **claim 26**, the best prior art found during the examination of the present, **Neale et al. (U.S. Patent Application Publication # 2003/0131079 A1)** in view of **Dolson et al. (U.S. Patent Application Publication # 2004/0006643 A1)**, fail to disclose "...determining by a PMTU which increased by a predetermined percentage for each round trip time that elapsed without receipt of an indicator that fragmentation has occurred, ..."

**Claims 27 and 28** are also allowed by virtue of their dependency on claim 26.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Response to Arguments***

6. Applicant's arguments filed on July 1, 2008 have been fully considered but they are not persuasive. The Applicant argues, see Page 4 Section A second paragraph Lines 3-5 states "... Dolson also fails to teach or suggest the features of the claimed invention for determining by proxies a size for a Path Maximum Transmission Unit (PMTU) for transmitting network packets.", with respect to claims 2 and 14. The examiner respectfully disagrees since Dolson teaches a proxy capable of executing a command that "If the new segment size is larger than the MTU and the original segment wasn't fragmented, then it must be split into multiple TCP segments. If the original segment was fragmented, additional fragments may be created." Paragraph [0187]

The Applicant argues, see Page 4 Section A second paragraph Lines 5-8 states "Dolson does not describe a second proxy detecting fragmentation of a packet received from transmission of repacketized packets by the first proxy and transmitting an acknowledgment packet marked with an indicator that fragmentation has occurred to the first proxy.", with respect to claims 2 and 14. The examiner respectfully disagrees since Dolson teaches the means for determining if an incoming packet requires being segmented (Fig.3 @ 100). Next, appending a modification tag to segment (Fig.3 @ 108)

Furthermore, Dolson et al. teach "Each state machine 100 (see FIG. 3) monitors the segments it sends and monitors the acknowledgements coming from the other side of the connection." (Paragraph [0234]) Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the means for determining the size of an incoming packet, the means for segmenting of a packet, the means for appending a tag onto said segment of data packet, the means for monitoring acknowledgments coming from other connections as taught by Dolson et al. within the proxies as taught by Neale et al. for the purpose of inspecting and modifying a data streams.

The Applicant argues, see Page 5 Section A first paragraph Lines 3-5 states "Mere monitoring does not equate to communications between proxies regarding detection by one proxy of fragmentation of repacketized packets transmitted from another proxy.", with respect to claims 2 and 14. The examiner respectfully disagrees since Dolson teaches "Each state machine 100 (see FIG. 3) monitors the segments it sends and monitors the acknowledgements coming from the other side of the connection." (Paragraph [0234]) It would have been obvious to regard monitoring as the action of detecting incoming data packets or data segments within the proxies involved in the data exchange transaction.

The Applicant argues, see Page 5 Section A third paragraph Lines 1-4 states "Since Neale and Dolson, alone or in combination, fail to teach or suggest a second proxy detecting fragmentation of a packet received from transmission of repacketized packets by the first proxy and transmitting an acknowledgment packet marked with an

indicator that fragmentation has occurred to the first proxy, ...", with respect to claims 2 and 14. The examiner respectfully disagrees since Dolson teaches the means for determining if an incoming packet requires being segmented (Fig.3 @ 100). Next, appending a modification tag to segment (Fig.3 @ 108) Furthermore, Dolson et al. teach "Each state machine 100 (see FIG. 3) monitors the segments it sends and monitors the acknowledgements coming from the other side of the connection." (Paragraph [0234]) Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the means for determining the size of an incoming packet, the means for segmenting of a packet, the means for appending a tag onto said segment of data packet, the means for monitoring acknowledgments coming from other connections as taught by Dolson et al. within the proxies as taught by Neale et al. for the purpose of inspecting and modifying a data streams.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Hand-delivered responses** should be brought to

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or early communications from the Examiner should be directed to Salvador E. Rivas whose telephone number is (571) 270-1784. The examiner can normally be reached on Monday-Friday from 7:30AM to 5:00PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Chirag G. Shah can be reached on (571) 272- 3144. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

Art Unit: 2419

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

*Salvador E. Rivas*  
S.E.R./ser

November 5, 2008

/Chirag G Shah/

Supervisory Patent Examiner, Art Unit 2419